LPC# 0971900001 Lake County
Waukegan Muni #1 Landfill - Waukegan
ILD 980902175
SF/HRS

Site Reassessment

Prepared by:
Office of Site Evaluation
Division of Remediation Management
Bureau of Land

SITE REASSESSMENT

for:

WAUKEGAN MUNICIPAL #1 LANDFILL
WAUKEGAN, ILLINOIS

ILD 980902175

PREPARED BY:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF LAND
REMEDIAL PROJECT MANAGEMENT SECTION
OFFICE OF SITE EVALUATION

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The approval signatures on this page indicate that this document has been authorized for information release to the public through appropriate channels. No other forms or signatures are required to document this information release.

TABLE OF CONTENTS

Section	Page
1.0 INTRODUCTION	1
2.0 SITE DESCRIPTION and HISTORY	3
2.1 Site Description	3
2.2 Operational History	5
2.3 CERCLA Investigative History	6
3.0 OTHER CLEANUP AUTHORITY ACTIVITIES	10
4.0 SOURCE DISCUSSION and PATHWAY ANALYSIS	11
4.1 Source Summary	11
4.2 Groundwater Pathway	12
4.3 Surface Water Pathway	14
4.4 Soil Exposure Pathway	15
4.5 Air Pathway	17
5.0 SUMMARY and CONCLUSIONS	18
6.0 REFERENCES	19

FIGURES & TABLES

Figure 1 ---- Site Location Map
Figure 2 ---- Waukegan Municipal #1 Landfill Site Topographic Map
Figure 3 ---- Waukegan Municipal #1 Landfill Site and Surrounding Area Map
Figure 4 ---- Waukegan Municipal #1 Landfill Site Property Map
Figure 5 ---- 4/21/1998 IEPA Sample Locations Map

Table 1 ---- Soil/Sediment Sample Summary
Table 2 ---- Residential and Monitor Well Sample Summary

APPENDICES

Appendix A. .....4-Mile Radius Map
Appendix B.....15-Mile Surface Water Route Map
Appendix C.....Photographs of Site with Descriptions

1.0 Introduction

On January 7, 2015 the Illinois Environmental Protection Agency's (IEPA) Office of Site Evaluation (OSE) was tasked by the Region V Offices of United States Environmental Protection Agency (U.S. EPA) to conduct a Site Reassessment at the former Waukegan Municipal #1 Landfill (ILD980902175). Now known as Henry Pfau Callahan Park it is located southwest of the intersection of York House Road and N. McAree Road, Waukegan, Illinois in Lake County (Figure 1).

The owner of the property is the Waukegan Park District (WPD). The park district has owned the property since 1967 when it was open field. The Site Reassessment addresses former landfill operations at the site, disposal trench areas, and leachate seeps.

U.S. EPA authorized a Site Reassessment to be conducted to determine the current status of the 22-acre site. This Site Reassessment will consist of an evaluation of existing information on site history, current site conditions, and evaluate analytical data associated with the site to determine if further Superfund investigation is warranted. The reassessment will supplement previous assessment work, illustrate how or if the site has changed since the CERCLA STEP and will also support emergency response or time-critical removal activities if it is determined that they are warranted. This reassessment is not intended to replace previous CERCLA assessments.

The Site Reassessment is designed to provide necessary information that will help determine if the site qualifies for possible inclusion on the National Priorities List, or should receive a No Further Remedial Action Planned (NFRAP) designation. At the end of the reassessment process the author will recommend that the site may be given a NFRAP designation, receive further Superfund investigation, or be referred to another state or federal clean-up program. The Site Reassessment is performed under the authority of the

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) commonly known as Superfund.

Waukegan Municipal #1 Landfill was placed on the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS), now known as Superfund Enterprise Management System (SEMS) on June 1, 1981. The site was originally investigated by IEPA in 1979 as a result of complaints and concerns registered with the Lake County Health Department (LCHD). Numerous citizen complaints were received by the health department regarding extremely offensive odors emanating from the landfill. Citizens also voiced concerns that past activities at the landfill may have resulted in contamination of soil, sediment, surface water, and groundwater on site and within the immediate area surrounding the landfill. The IEPA has conducted a number of investigations at the landfill from 1978 through present day. In 1987 U.S. EPA's contracted Field Inspection Team (FIT), Ecology & Environment (E&E), conducted a Screening Site Inspection. In April 1998, IEPA completed a Site Team Evaluation Prioritization (STEP) at the site.

2.0 Site Description and History

2.1 Site Description

The former Waukegan Municipal #1 Landfill is located in a former rural, now urban setting at the southwest corner of the intersection of York House Road and McAree Road approximately 3.5 miles northwest of the downtown business district of Waukegan. The former landfill is situated in the east-central portion of Section 1, Township 11 North, Range 12 West, and in the west-central portion of Section 6, Township 11 North, Range 11 West of the Third Principal Meridian. Specifically, the property can be found at latitude 39.426152, longitude -87.685297 in Wabash Township, Lake County (Figure 2). This property is located within the Corporate Limits of the City of Waukegan.

The landfill is currently inactive encompassing approximately twenty-two acres of former active area. Site operations consisted of excavating a cell area, reported to have been 250 feet wide and to a depth of 35 feet below ground surface, which was then used as the active cell until filled. Once the cell was filled it was closed and covered as another cell was excavated for use. The property is bounded on the north-northeast by Bonnie Brook Baptist Church property; on the east by McAree Road, beyond which is Bevier Park and a pond receiving run-off from the landfill perimeter channels; on the north by York House Road, across which are residences; to the west by vacant land (north and central) and residences across from the southwest corner; and on the south by a marsh area in the southwest corner and residences along the remainder of the south property line. Most of the residences surrounding the landfill have been present for approximately 35 - 40 years.

The landfill property is located in an area of northern Illinois where surficial terrain is rolling due to various types of glacial action and deposition. The former landfill is relatively flat across the top of the former trench and fill areas and fairly well vegetated. There are some depressed areas containing long grass and some standing water. In the central and western portions of the landfill water tends to accumulate in large pools. This water has been noted to be clear and odor free and appears to be rain water that has accumulated in settled sections of the site surface thought to be associated with former cells. Some bare areas remain evident and are thought to correspond with ridges of the underlying trenches. Land surface elevation across the site ranges from approximately 690 feet above mean sea level (MSL) at the eastern perimeter to approximately 703 feet above MSL near the northwest corner of the property.

A number of discernable, channelized surface water and leachate run-off routes had been noticeably present flowing from various locations on top of the landfill's cover or near the boundaries of the property in the past, however many of the seeps have been remediated. According to the Lake County Health Department Closed Landfill Inspection conducted on May 29, 2015 there are a few that remain seeping. Run-off from the site itself generally follows a radial pattern. Run-off accumulates in ditches along the northern, southern, and eastern property boundaries. The few leachate seeps that remain are located along the north side of the site and flow into the run-off ditch along the northern property boundary. At the central-eastern property boundary a buried drainage culvert routes surface water run-off, from the ditches, under McAree Road ending in the Bevier Park pond, approximately 190 feet east of the sites eastern property boundary and is noted as the nearest body of water to the site and also designated as the Probable Point of Entry (PPE) to surface water from the site. According to the Illinois Department of Natural Resources (IDNR) the pond is indicated as a fishery with regulations designating catch

limits for all fish species present. The pond appears to be the head waters of Yeoman Creek, which, according to the U.S. Geological Survey (USGS) 7.5 minute Zion Quadrangle map and the National Wetlands Inventory Maps, is an intermittent stream flowing south and southeast approximately 4.5 miles where it joins the Waukegan River which flows 0.6 miles subsequently entering Lake Michigan. The National Wetlands Inventory Map also indicates that Bevier Pond is the closest off-site wetland area (palustrine, unconsolidated bottom, intermittently exposed, excavated) to the landfill. Additional wetland areas are noted along the 5.1 mile downstream route from the outfall of Bevier Pond.

The landfill property can be accessed by vehicle or pedestrian traffic at any location around the property, as there are wooden split-rail fences present. A gravel roadway is present at the northwest corner of the landfill which runs south from York House Road into a gravel parking lot. The roadway is the access point for vehicle traffic attending Bicycle Motocross (BMX) events at the Waukegan BMX Track which was constructed in the northwest corner of the property in 2006. A lockable steel tube type gate can be extended across the road when the park and track are closed. Other than a concession stand west of the track there are no permanent building structures currently existing on the landfill site.

2.2 Operational History

The property on which the former Waukegan Municipal Landfill was established has been owned by the Waukegan Park District since approximately 1967. Prior to development of the landfill the area was an open field. In April 1970, the City of Waukegan and T/K City Disposal, Inc. (TKCD) sought approval from Lake County to construct a solid waste disposal facility on the property. Lake County approved the request and subsequently the Waukegan Park District

consented to allow use of this land. Site operations began in early 1970 prior to the issuance of a solid waste disposal permit by the State of Illinois. The first file information contained in IEPA records of the site is a Solid Waste Disposal form dated February 6, 1970 indicating the site was closed. However, IEPA inspectors, during a May 20, 1971 inspection, observed a tank truck dumping liquid waste into a trench. IEPA filed a complaint with the Illinois Pollution Control Board against the city, TKCD, and Zion State Bank and Trust (trustee of the property). Fines were issued to all three entities. IEPA issued an operating permit for the landfill on March 30, 1972. The landfill was permitted for disposal of domestic trash and garbage, brush, demolition debris, large bulky material and paper waste. Various inspections conducted by IEPA field personnel indicated that final cover had been placed on the landfill as of August 21, 1972, however, active trench areas remained in portions of the site. In 1973, the landfill reached full capacity, which was not supposed to be reached until 1976, and was closed. The site remained without final cover until closure certification was obtained from IEPA on July 29, 1976. Operations at the site over the years have been overseen by the WPD with daily operations conducted by National Disposal of Barrington (beginning August, 1970), T/K City Disposal of Waukegan (December, 1970), and Browning Ferris of Waukegan (June, 1975).

2.3 CERCLA Investigative History

The IEPA has conducted a number of investigations at the landfill from 1978 through present day. In 1987 U.S. EPA's contracted Field Inspection Team (FIT), Ecology & Environment (E&E), conducted a Screening Site Inspection. Periodic inspections, beginning in 1972 and continuing through present day, conducted by the IEPA and/or the LCHD and WPD have noted various violations and leachate seeps at some locations around the landfill. Samples

of leachate, on-site monitoring wells, surface water, and soil/sediment (on and off-site), and residential drinking water wells have been collected during various inspections and investigations.

Laboratory analysis of samples collected by IEPA during the April 1998 STEP revealed that while there were numerous Volatile, Semi-volatile, Pesticide/PCB compounds and inorganic analytes present in each of the soil/sediment samples, none exceeded U. S. EPA Regional Removal Management Levels (RMLs) except thallium. The RML for Thallium (2.3 ppm) was exceeded in soil/sediment samples X206 (4.8 ppm), X208 (3.5 ppm), and X209 (Duplicate of X208) (3.0ppm). See Soil/Sediment Sample Summary Table 1 for compiled laboratory results.

Laboratory analysis of five (5) residential drinking water wells sampled during the STEP investigation adjacent to or near the former landfill indicated one volatile compound, one semi-volatile compound, and various inorganic analytes present. Although these compounds were present in the wells, none exceeded RMLs or U.S. EPA Maximum Contaminant Level (MCL) values except Bis(2-ethylhexyl)phthalate. Bis(2-ethylhexyl)phthalate was present in two (2) of the wells, G203, and G205, (also found in sample number G206 (duplicate of G205)). The MCL for Bis(2-ethylhexyl)phthalate (6 ppb) was exceeded in residential well sample G203 (8.0 ppb) as well as in G206 (the duplicate of G205) (15 ppb). Although present in these two wells, it is unknown if the compound is site related. See Residential and Monitoring Well Sample Summary Table 2 for compiled laboratory results.

Laboratory analysis of the two (2) groundwater monitor wells (G101 and G102) sampled indicated numerous volatile compounds, semi-volatile compounds, and inorganic analytes present. RMLs and/or MCLs for methylene chloride, 2-butanone, benzene, arsenic, barium, chromium, cobalt, iron, lead, and manganese were exceeded in one or both monitor wells. See

Residential and Monitoring Well Sample Summary Table 2 for compiled laboratory results.

In addition to evaluation of laboratory analytical results utilizing U.S. EPA RML & MCL criteria the results are also evaluated utilizing Hazard Ranking System (HRS) scoring criteria and U.S. EPA Superfund Chemical Data Matrix (SCDM). HRS criteria include establishing an observed release in groundwater, surface water, and/or air migration pathways and establishing observed contamination in the soil exposure pathway. By comparing laboratory analytical data from a sample background location with analytical data from site-related samples an observed release and/or observed contamination are established. In addition, the concentration of at least one hazardous substance in a release sample must be significantly (at least three times the background concentration) above the background level, and that the substance in the release can be attributed to the site. See Table 1 and Table 2 for evaluation of laboratory results of site samples compared to background.

The Park District has attempted through the years to correct and remediate violations and inadequacies. Remedial efforts have consisted of placing a 24-inch thick clay cap over the entire landfill along with regrading, installation of leachate collection wells (February 1988), installation of groundwater monitoring wells on and off-site, revegetation, and development of the site as a passive recreational area.

Current uses of the site include open field, nature paths and areas, Frisbee golf, a bike path east to west across the site, and a large BMX course at the west end of the site, as well as a gravel parking area for these activities located at the northwest corner of the site. The site currently remains prone to leachate seepage at four to five locations, mainly noted along the north side of the site where wet, red staining of the ground has been routinely observed. Active seepage of liquid with gas bubbling to the surface was observed by WPD and LCHD personnel

at two (2) of the locations during the May 29, 2015 Closed Landfill Inspection. These particular areas have been repaired multiple times over the years.

3.0 Other Cleanup Authority Activities

The Waukegan Municipal #1 Landfill site is not enrolled in IEPA's Site Remediation Program (SRP) and has not been evaluated by USEPA's Emergency Response Program. The 2016 Site Reassessment (SR) completed by the IEPA's Office of Site Evaluation was conducted to assess current conditions at the site, to determine if contaminants, found during previous investigations, remain on the property and if so is the contamination at concentrations requiring further action. The SR investigation, including a site visit, indicates that there may still be some contamination remaining on the property in various locations such as leachate seeps, the peripheral drainage routes, and in the monitoring wells (see current site photos, Appendix C).

The WPD and the LCHD conduct periodic Closed Landfill Inspections at the former landfill. These inspections consist of collecting monitor well samples, inspecting land surface conditions and inspecting and sampling former seep areas. When necessary, WPD has and will continue to correct seepage issues as well as surface subsidence.

4.0 Source Discussion and Pathway Analysis

4.1 Source Summary – Contaminated Soil/Sediment on Waukegan Municipal #1 Landfill Property

During the numerous compliance inspections conducted by IEPA and Lake County Health Department and the 1998 STEP Investigation conducted by IEPA at the former landfill samples of the various media were collected. Soil/sediment samples were collected from nine locations around the perimeter of the former landfill property. Laboratory analysis of the samples revealed various compounds exceeded at least three times background concentrations in each sample, indicating an area of contaminated soil/sediment. The extent of the contamination was determined using sample points X202, X204, X206, and X208. All of the soil/ sediment samples were collected from the upper six inches of sediment, in drainage ways or suspected leachate seep areas and may be attributable to the former activities and use of the landfill. According to the HRS definition of a source when referring to a landfill, only one sample point needs to have contamination at least three times background for the entire landfill to be considered a source. Based on this definition the source is an area of twenty-two acres, equating to 958,320 square feet.

During the April 1998 STEP sampling activities, one soil/sediment sample was collected from beyond the landfill property. Sample X205 was collected from Bevier Park pond, east of the former landfill. A buried culvert at the east perimeter of the landfill carries run-off water etc. from the landfill property, under McAree Road and into the pond. The sample was collected five feet north of the culvert's concrete outfall pad along the west bank of the pond. Laboratory sample analysis indicated a number of volatile, semi-volatile, pesticide/PCB compounds, and

inorganic analytes present within the sample (see Table 1). Several of those were noted to be at least three times background concentrations. None however, exceeded residential RMLs.

4.2 Groundwater

According to the Illinois State Geological Survey (ISGS) and the Illinois State Water Survey (ISWS) geology beneath the site consists of glacial drift deposits which vary in thickness from approximately 90 feet to 300 feet. Beneath the glacial deposits, and hydrologically connected, are the upper bedrock formations consisting principally of beds of dolomite and shale which dip easterly at approximately ten feet per mile. This unit, known as the Silurian Dolomite, is part of the geohydrologic system present throughout northeastern Illinois that is referred to as the shallow dolomite aquifer. This formation is encountered at depths from 90 to 300 feet and range in thickness from a featheredge where eroded (west) to more than 200 feet in some locations in the eastern portion of Lake County. Beneath the Silurian aquifer is the Maquoketa Shale, a non-water bearing unit, separating the shallow Silurian aquifer from the deep sandstone and dolomite units making up the Cambrian-Ordovician aquifer.

Groundwater in the vicinity of the landfill property is used for drinking water by approximately 10 residences located immediately adjacent to the site and across York House Road to the north. The nearest private well to the landfill is approximately 200 feet south of the southern property line, near the southwest corner of the landfill. Depth of this well is unknown, however, three others previously sampled on the same block are approximately ninety feet deep. The closest public water supply system utilizing groundwater is approximately 2.2 miles northeast of the landfill serving a trailer park. This system consists of two wells serving approximately 1000 persons and are from 500 feet to 980 feet deep. One other public water

supply system is located approximately 3.9 miles south of the landfill also serving a trailer park. This system utilizes three wells from 170 feet to 1,100 feet deep serving approximately 2,500 persons.

ISWS well logs indicate that within four miles of the landfill, most private wells are found to be from 80 to 250 feet in depth. Within a four-mile radius of the landfill there are approximately 5,100 persons utilizing individual private/residential wells and approximately 40 to 50 non-community public drinking water wells (restaurants, parks, gas stations, etc.) being utilized. Wells within the four-mile radius of the landfill are finished in either shallow sand and gravel lenses or in the deeper dolomite bedrock formations.

Individuals Utilizing Public and Private Water Wells

	Population	
Distance (mi.)	Public	Private
On-Site	0	0
0 – ¼	0	148
¼ - ½	0	180
½ - 1	0	450
1 – 2	0	400
2 – 3	1000	247
3 – 4	2500	175

Groundwater immediately adjacent to the landfill was contacted at three feet below ground surface based on measurements obtained during previous sample events of two monitor wells (G101 and G102). These monitor wells are located approximately ten feet east of the landfills northeast and southeast fence line. Depth of soil contamination due to the former landfill operation is not known, however, as previously noted, cell excavation reached approximately 35 feet below original surface grade, therefore indicating that groundwater would be in contact with

landfilled material. Previous investigations documented volatile and semi-volatile compounds, and inorganic compounds present in groundwater sampled from the two mentioned monitor wells. Several of the compounds exceed U.S. EPA RMLs (Table 2). There have been no reports, complaints, or indications of groundwater contamination by any residential well water users in the area surrounding the landfill. However, laboratory analysis of one residential well (G203) and the duplicate sample (G206) from another residential well (G205) sampled in April 1998 indicated that bis(2-ethylhexyl) phthalate exceeded MCLs (Table 2). No recent samples are known to have been collected.

4.3 Surface Water

Surface water drainage from the former landfill flows east into Bevier Park, ending in the Bevier Park pond, approximately 190 feet east of the landfills eastern property boundary and is noted as the nearest body of water to the site and also designated as the Probable Point of Entry (PPE) to surface water from the site. According to the Illinois Department of Natural Resources (IDNR) the pond is indicated as a fishery with regulations designating catch limits for all fish species present. The pond appears to be the head waters of Yeoman Creek, which, according to the U.S. Geological Survey (USGS) 7.5 minute Zion Quadrangle map and the National Wetlands Inventory Maps, is an intermittent stream flowing south and southeast approximately 4.5 miles where it joins the Waukegan River which flows 0.6 miles subsequently entering Lake Michigan. The National Wetlands Inventory Map also indicates that Bevier Pond is the closest off-site wetland area (palustrine, unconsolidated bottom, intermittently exposed, excavated) to the landfill. Additional wetlands exist in the drainage ditches surrounding the landfill, the largest area being an approximately two-acre marsh area located at the southwest corner of the landfill.

Multiple wetland areas are noted along the 5.1-mile downstream route from the outfall of Bevier Pond to Lake Michigan.

In addition to wetland environments, IDNR Illinois Natural Areas Inventory lists Waukegan Beach Natural Area at a distance of 3.5 miles southeast of the former landfill. This is also a lakeshore environment (lacustrine, littoral, unconsolidated shore, intermittently flooded). Also listed on the Inventory is Illinois Beach Nature Preserve, located three miles east of the landfill. As designated by the Federal Emergency Management Agency Flood Insurance Maps, the landfill property is not located within a 500 year flood plain area.

The majority of drinking water for the City of Waukegan and surrounding communities is supplied by water from Lake Michigan. Information obtained from local water departments, USGS, and topographic maps indicate Lake Michigan water is obtained through one active aqueduct/intake of three aqueducts/intakes located south and southeast of the Waukegan Waterworks in Waukegan Harbor and Lake Michigan. The other two are standby for emergency purposes. Both can be activated quickly if required. The Waukegan water system serves approximately 133,000 people in surrounding communities such as Gurnee, Park City, Beach Park, and North Chicago, among others. The Great Lakes Naval Training Center (GLNTC), in addition to their own drinking water intakes, is also connected to the Waukegan system as a back-up supply. The GLNTC system serves approximately 30,000 people including the Veterans Administration Hospital southwest of the GLNTC base.

4.4 Soil Exposure

As mentioned, the facility is no longer an active landfill. Waukegan Park District renamed the property Henry Pfau Callahan Park. Current uses of the site include open field, nature paths

and areas, Frisbee golf, a bike path east to west across the site, and a large BMX course at the west end of the site, as well as a gravel parking area for these activities located at the northwest corner of the site. The property can be accessed by vehicle or pedestrian traffic at many locations, the only restriction being wooden split-rail fences present along the south portion of the eastern property perimeter and along the south portion of the western perimeter. No other fencing or barriers is present to restrict access to the facility. The gravel site access road entrance, at the northwest corner of the property, can be restricted through use of a lockable steel tube type gate when extended across the road when the park and BMX track is closed.

Beginning in 1972 and continuing through present day, periodic inspections are conducted by the IEPA and/or the LCHD and WPD. The site currently remains prone to leachate seepage at four to five locations, mainly noted along the north side of the site where wet, red staining of the ground has been routinely observed. These particular areas have been repaired multiple times over the years.

Laboratory analysis of samples collected by IEPA during the April 1998 STEP revealed that while there were numerous Volatile, Semi-volatile, Pesticide/PCB compounds and inorganic analytes present in each of the soil/sediment samples, none exceeded U. S. EPA Regional Removal Management Levels (RMLs) except thallium. The RML for Thallium (2.3 ppm) was exceeded in soil/sediment samples X206 (4.8 ppm), X208 (3.5 ppm), and X209 (Duplicate of X208) (3.0ppm). Laboratory analysis also revealed various compounds exceeded at least three times background concentrations in each sample. All soil/sediment samples were collected from the upper six inches of soil/sediment, in drainage ways or suspected leachate seep areas and may be attributable to the former activities and use of the landfill.

The area surrounding the former landfill is residential, with an estimated population of 3,500 within one mile of the facility. The nearest residence is approximately 200 feet south of the facility with the residence sharing a common property line with the landfills southern property boundary. Three other residences (neighbors on the same street) share the same property boundary with the landfill.

There are no schools or daycare facilities within 200 feet of documented contamination.

4.5 Air Route

Although numerous citizen complaints and concerns were registered with the LCHD, numerous compliance inspections having taken place, and various investigations by U.S. EPA and IEPA have occurred since the inception of the landfill, there have been no formal air samples collected. The landfill has been inactive since 1973 when it reached full capacity. Final cover was not put in place until mid-1976. Since that time WPD has kept the property well vegetated. Some locations on site with chronic sparse areas are continually being re-vegetated. With established vegetation the potential for particulate migration from the property appears minimal.

5.0 Summary and Conclusions

Site Investigations conducted by IEPA and numerous compliance inspections conducted by IEPA and Lake County Health Department at this facility have historically indicated the presence of multiple compounds remaining in soil/sediment samples, residential drinking water well samples, and monitor well samples. As part of the SR, review of data collected during past inspections and investigations indicated multiple compounds present in both soil/sediment samples as well as groundwater samples, few exceeded RMLs. Evaluation of all site samples to background criteria indicates multiple compounds at all site sample locations with concentrations exceeding at least three times background levels. However, none of these exceed RMLs or MCLs. Evaluation of the monitor wells was based on RML and MCL criteria only, as there was no background well available for comparison. Based on the April 2016 Site Reassessment investigation, previous investigations, and evaluation of the site using CERCLA criteria and potential health and/or environmental concerns, soil/sediment, and groundwater impacts appear to remain at the site. The impacts present a potential threat to human health and the environment. The HRS score is predominantly based on site impacts and a low concentration of contaminants in soil/sediments in the drainage channels immediately adjacent to the site on its northern and southern perimeters.

6.0 REFERENCES

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State of Illinois, Department of Energy and Natural Resources, 1993, Zion, Illinois - Wisconsin, 7.5 Minute Topographic Map.

State of Illinois, Department of Energy and Natural Resources, 1993, Wadsworth, Illinois – Wisconsin, 7.5 Minute Topographic Map.

State of Illinois, Department of Energy and Natural Resources, 1998, Libertyville, Illinois, 7.5 Minute Topographic Map.

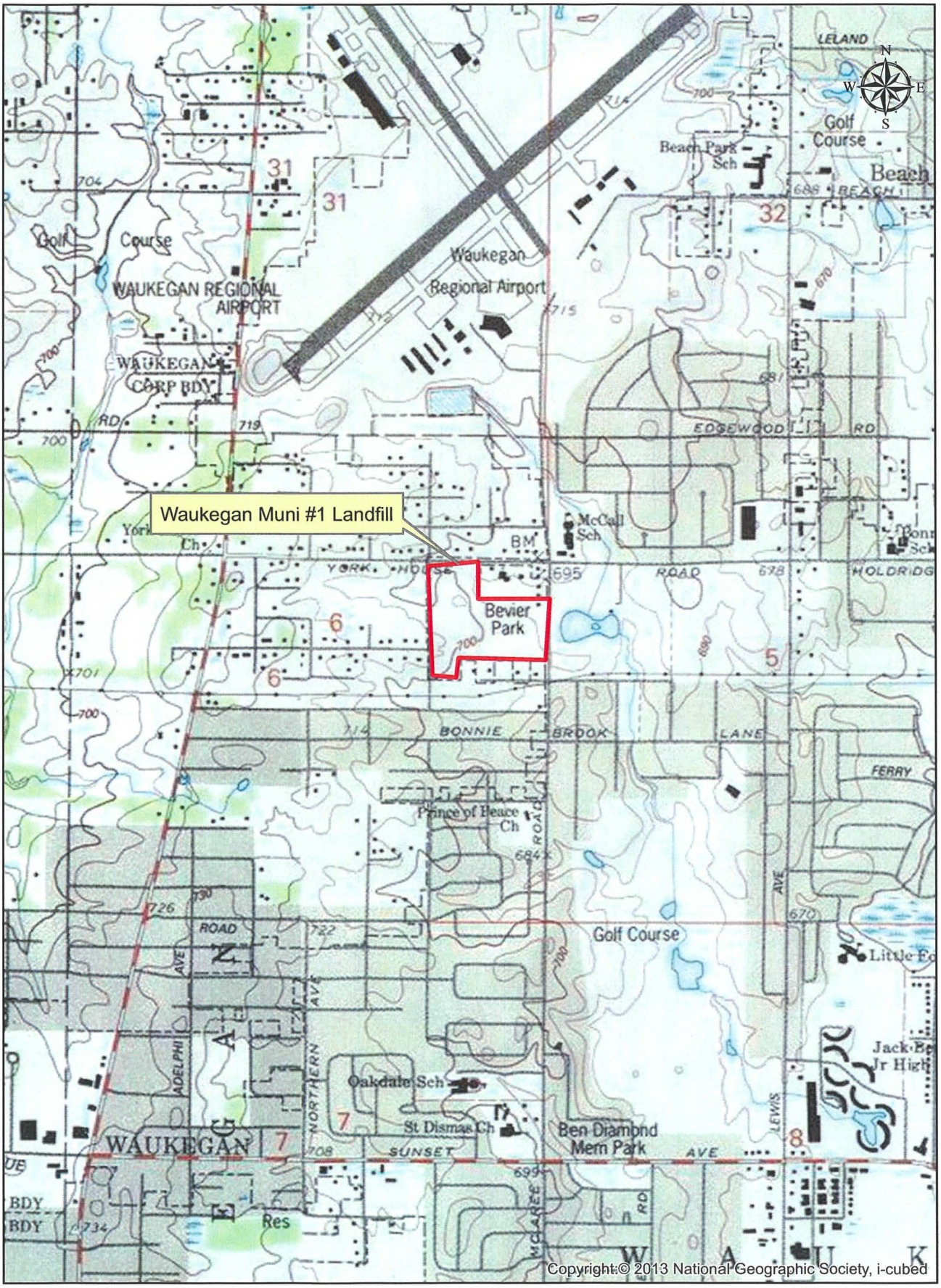
State of Illinois, Department of Energy and Natural Resources, 1998, Waukegan, Illinois, 7.5 Minute Topographic Map.

FIGURES and TABLES

Waukegan Muni #1 Landfill

Site Location

Figure 1



Waukegan Muni #1 Landfill - Site Topographic Map

Figure 2

Waukegan Muni #1 Landfill Site and Surrounding Area

Figure 3

Waukegan Muni #1 Landfill Site Property

Figure 4

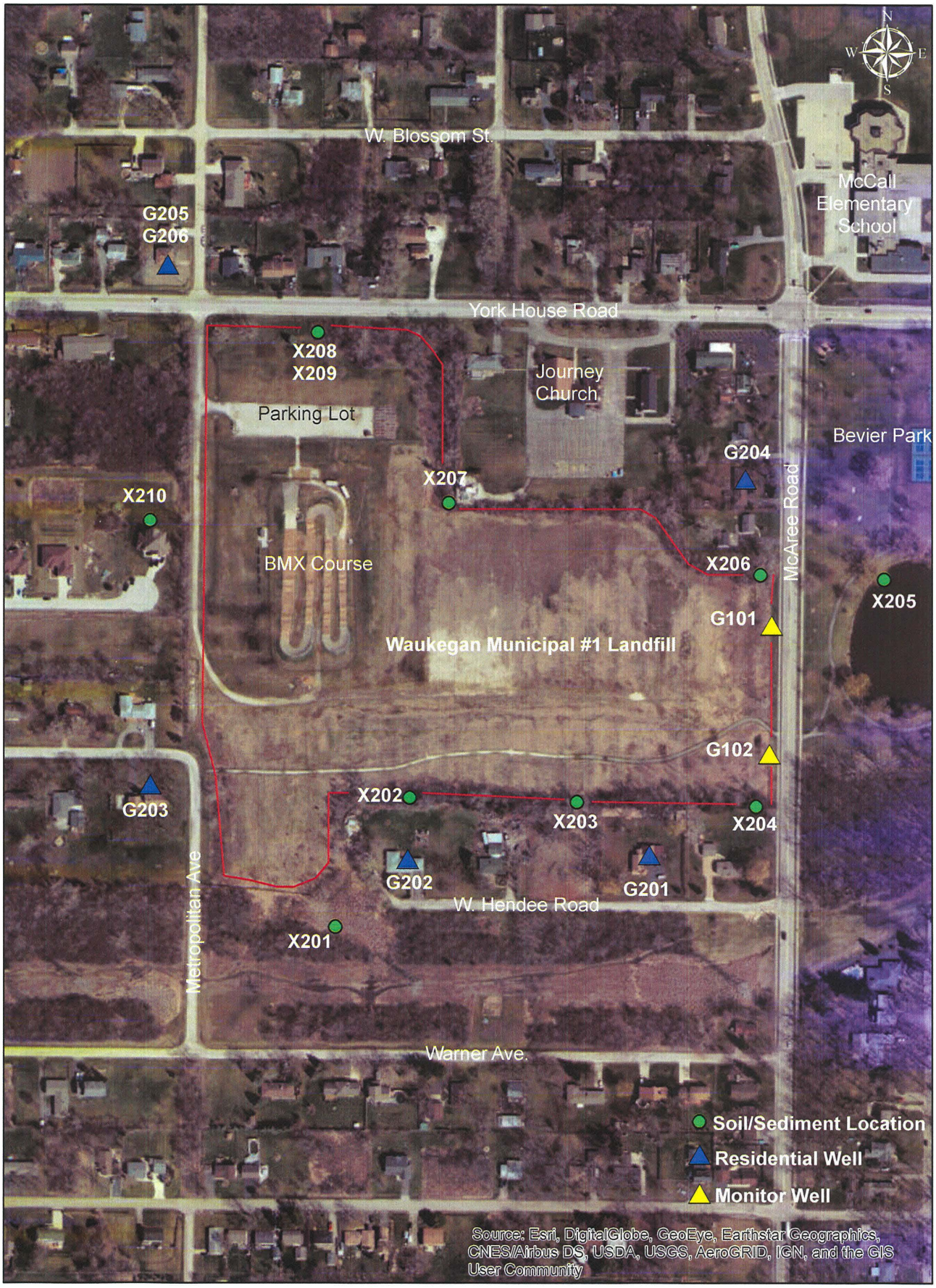


Figure 5

SAMPLE LOCATIONS
4-21-98

WAUKEGAN MUNI #1 LANDFILL
Waukegan, Illinois

SOIL/SEDIMENT SAMPLE SUMMARY

TABLE 1

Sampling Location : Matrix : Date Sampled : Units :	U.S. EPA Removal Management Levels ug/Kg **Residential** Soil	Background is at least 3X or 10X if "J" ug/Kg	X201 Soil/Sediment 4/21/1998 ug/Kg		X202 Soil/Sediment 4/21/1998 ug/Kg		X203 Soil/Sediment 4/21/1998 ug/Kg		X204 Soil/Sediment 4/21/1998 ug/Kg		X205 Soil/Sediment 4/21/1998 ug/Kg		X206 Soil/Sediment 4/21/1998 ug/Kg		X207 Soil/Sediment 4/21/1998 ug/Kg		X208 Soil/Sediment 4/21/1998 ug/Kg		X209 Soil (Dup of X108) 4/21/1998 ug/Kg		X210 Soil (Bkgrnd) 4/21/1998 ug/Kg	
pH (in Lab.)			7.2		7.3		7.1		7.4		7.6		--		7.3		6.9		7.4		6.8	
Volatile Compounds			Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Acetone	180000000				36		10	J			23	DJ										
Methylene chloride	1000000								4	J	10	DJ										
4-Methyl-2-pentanone	99000000				19	J																
Toluene	15000000				16	J					150	D										
Chlorobenzene	830000				3	J																
Ethylbenzene	580000				28		2	J														
Xylene (total)	1700000				95		6	J	5	J												
Semivolatile Compounds																						
4-Methylphenol					120	J					1000											
Naphthalene	380000				200	J																
Diethylphthalate	150000000		98	J																		
Phenanthrene			96	J							120	J	280	J	500	J	100	J	62	J		
Anthracene	54000000														98	J						
Fluoranthene	7200000	550	160	J	93	J			130	J	150	J	350	J	690		170	J	110	J	55	J
Pyrene	61000000		120	J					100	J	140	J	340	J	560	J	130	J	120	J		
Benzo(a)anthracene	16000		62	J							52	J	110	J	280	J	63	J				
Chrysene	1600000		92	J					99	J	78	J	150	J	290	J	81	J	68	J		
Bis(2-ethylhexyl)phthalate	3800000										1800	J										
Benzo(b)fluoranthene	16000	480	85	J	100	J			110	J	100	J	270	J	480	J	120	J	100	J	48	J
Benzo(k)fluoranthene	160000	460	75	J	99	J			130	J	120	J	310	J	560	J	140	J	120	J	46	J
Benzo(a)pyrene	1600		69	J									130	J	250	J	65	J	53	J		
Indeno(1,2,3-cd)pyrene	16000												78	J	160	J						
Benzo(g,h,i)perylene													100	J	160	J						
Pesticide/PCB Compounds																						
alpha-BHC	7700																		0.15	J		
Heptachlor	13000		3.1																			
Heptachlor epoxide	3100		20				26								17		1.7	J				
Dieldrin	3400						14	J			2.4	J			16	J	1.3	J				
4,4'-DDE	200000				5.4	J	9.9	J	17	J	0.73	J			10	J	0.88	J	1.7	J		
Endrin	57000		20						2.4	J							0.94	J				
Endosulfan II					2.2	J	3.5	J	11	J					4.8	J	0.89	J				
4,4'-DDD	230000		1.1	J	1.6	J			4.7	J												
4,4'-DDT	110000				2.8	J	2.8	J	22	J	4.7	J					1.4	J	1.1	J		
Methoxychlor	950000	19	52		39	J	23	J	80	J	2.2	J			67	J	3.4	J	5.1	J	1.9	J
Endrin ketone			15																			
Endrin aldehyde							2.9	J							2.4	J						
alpha-Chlordane	100000		1.5	J			1.2	J														
gamma-Chlordane	100000										2.4	J										
Aroclor-1248	23000				420		2700		2100						1800		120		96			
Aroclor-1260	24000																39	J				
Inorganic Analytes	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Aluminum	230000	84700	11200		12800		9350		13100		7380		16700	J	8220	J	14100	J	11700	J	8470	J
Antimony	94												0.49	R	0.48	R	0.52	R	0.52	R	0.49	R
Arsenic	68	48	7	J	9.6	J	6.8	J	13.2	J	9.7		20.3	J	2.9	J	8	J	8	J	4.8	J
Barium	46000	216	58.6		154		52.7		159		121	J	241		91.6		202		249		72	
Beryllium	470	1.41	0.57	J	0.66	J	48	J	0.79	J	0.59		1.6		0.4		1		1.1		0.47	
Cadmium	210										1.3											
Calcium		18000	62800		75800		12700		79500		315000	J	5560	J	1120	J	5000	J	2730	J	1800	J
Chromium		95	19.9	J	21.2	J	16.3	J	24.2	J	39.8		21.8	J	13.8	J	16.1	J	15.9	J	9.5	J
Cobalt	70	6	8.6		8.5		8.4		11.5		6.5		12		1.5		3.9		5.6		2	
Copper	9400	21.9	26.6	J	31	J	26.3	J	165	J	15.8		18.3		6.6		14		17		7.3	
Iron	160000	32400	27500		39200		16700		38100		19000		34300		8920		18600		17300		10800	
Lead	400	38.4	18.7		31.3		18.7		51.5		19.2	J	45.3		7.8		28		14.5		12.8	
Magnesium		2751	27900		14400		8220		27200		8200		2410		1140		1530		2550		917	
Manganese	5500	124.8	476		657		200		594		1190	J	1230		72.7		167		163		41.6	
Mercury	33																					
Nickel	4600	14.4	23.5		22.8		17.9		26.1		14.7		16.1		10.3		9.9		17.5		4.8	
Potassium		1209	2530	J	2470	J	1480	J	3360	J	822		1200		255		586		380		403	
Selenium	1200												1.6	J			1.3	J				
Silver	1200																					
Sodium		753	411		1290		279		1200		463		286		360		218		654		251	
Thallium	2.3	5.1									1.4		4.8		1.7		3.5		3		1.7	
Vanadium	1200	63.3	23.6	J	29.5	J	23.6	J	31.1	J	19.1		54.3		28.5		32.4		25.8		21.1	
Zinc	70000	210	160	J	95.2	J	54	J	258	J	85.2	J	75.9	J	17.7	J	49.9	J	44.6	J	21	J
Cyanide	69	0.18					1.1				0.37	J	0.13		0.12		0.13		0.13		0.06	

- Results highlighted in **BLUE & BOLDED** are exceedances of U.S.EPA RMLs.
- Results highlighted in **RED & BOLDED** are at least 3 times background or if background is "J" then at least 10 times background.
- Blank cells indicate analysis of compound was not above detection limit.
- Data Qualifier "D" signifies that dilutions were required for the analysis.
- Data Qualifier "J" signifies an estimated value.

WAUKEGAN MUNI #1 LANDFILL
Waukegan, Illinois

RESIDENTIAL and MONITOR WELL SAMPLE SUMMARY

TABLE 2

Sampling Location : Matrix : Date Sampled : Units : pH (in Lab.)	U.S. EPA Removal Management Levels ug/L **Residential** Drinking Water	U.S. EPA Maximum Contaminant Level ug/L	Background is at least 3X or if "J" 10X ug/L	G201 Residential Well 4/21/1998 ug/L		G202 Residential Well 4/21/1998 ug/L		G203 Residential Well 4/21/1998 ug/L		G204 Residential Well 4/21/1998 ug/L		G205 Residential Well 4/21/1998 ug/L (Background)		G206 Residential Well 4/21/1998 ug/L (Dup. of G205)		G207 Residential Well 4/21/1998 ug/L (Field Blank)		G101 Monitor Well 4/21/1998 ug/L		G102 Monitor Well 4/21/1998 ug/L		Trip Blank 4/21/1998 ug/L	
Volatile Compounds				Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Chloromethane	560																	0.5	J				
Acetone	42000		9	3		2		3		3		3		3		11		8000	D	35		5	
Methylene chloride	320	5																**6**					
Carbon disulfide	2400																	1					
1,1-Dichloroethane	280																			100			
Chloroform	22	80														0.7							
2-Butanone (MEK)	17000																	**36000**	D				
Benzene	46	5																0.6	J	**110**			
4-Methyl-2-pentanone (MIK)	19000																	1500	D	230			
2-Hexanone	110																	43					
Toluene	3300	1000																10		**4400**	D		
Xylene (total)	580	10000																		28			
Semivolatile Compounds																						No Sample	
2-Methylphenol																				4	J		
4-Methylphenol																		42	J				
Diethylphthalate	45000																			10			
Bis(2-ethylhexyl)phthalate	560	6	10					**8**				1	J	15									
Pesticide/PCB Compounds																						No Sample	
No Compounds Detected																							
Inorganic Analytes																						No Sample	
Aluminum	60000																	13300		42000			
Antimony	23	6																1.3		1.4			
Arsenic	5.2	10																**70**		**55**			
Barium	11000	2000		**56**				**64.6**		**76.1**								**2790**		1300			
Beryllium	74	4																					
Cadmium	28	5																0.7		1			
Calcium				**77000**		**703**		**46600**		**82200**								553000		596000			
Chromium	67000	100																44.3		**173**			
Cobalt	18																	**32.9**		**68.2**			
Copper	2400	1300				**6.4**				**13.1**								55.6		146			
Iron	42000			**1410**		**87.9**		**732**		**1310**								**80000**		**131000**			
Lead	15	15								**4**								**29**		**110**			
Magnesium			309	**71600**		**553**		**35400**		**75300**		106						352000		397000			
Manganese	1300			**11**				**9.5**		**20.9**								**1520**		**3100**			
Mercury	1.9	2																					
Nickel	1200																	138		196			
Potassium				**1730**				**1480**		**1990**				**535**				15700		961000			
Selenium	300	50																					
Silver	280																						
Sodium			432000	49600		213000		47200		37900		144000		148000				711000		213000			
Thallium	0.6	2																					
Vanadium	260																	33.9		96.1			
Zinc	16000			**46.3**				**52**		**129**								109		571			
Cyanide	4.4	200																					

- Results highlighted in**BLUE & BOLDED** are exceedances of U.S.EPA RMLs and/or U.S.EPA MCLs.
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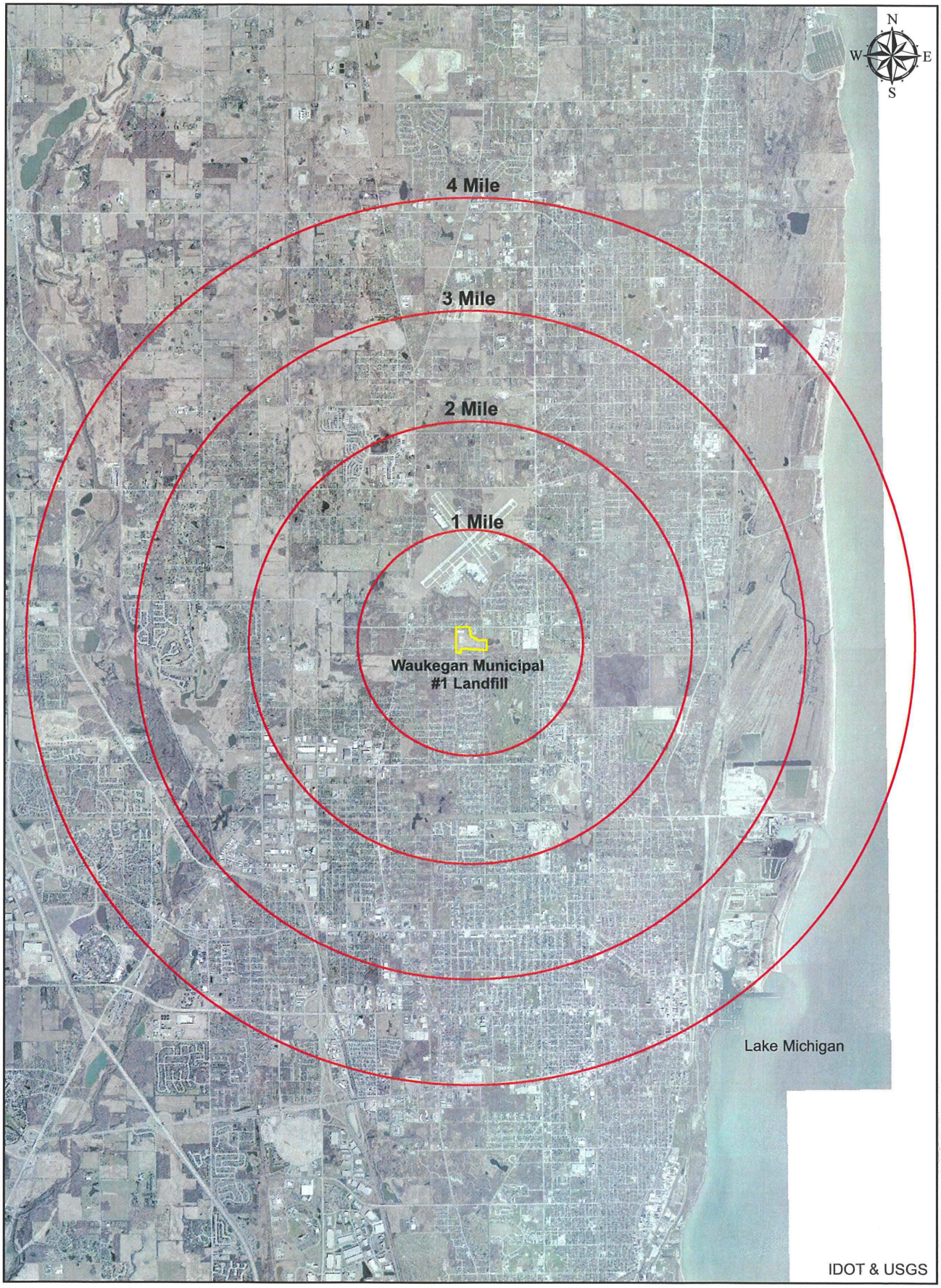
APPENDICIES

APPENDIX A

4 - Mile Radius Map



Waukegan Municipal #1 Landfill

4 Mile Radius Map

APPENDIX B

15 – Mile In-Water Segment Map

Waukegan Muni #1 Landfill

15 Mile Surface Water Route

APPENDIX C

Photographs of Site

(Photo #1) East side site entrance – photo taken facing north near G102.

(Photo #2) Asphalt walking path – photo taken facing SW near G102.

(Photo #3) Asphalt walking path – photo taken facing east near X203.

(Photo #4) Center area of Landfill – photo taken facing north near X203.

(Photo #5) Gravel walking path – photo taken facing SW near X202.

Photo #6) West area of landfill, BMX bike track – photo taken facing NW near X202.

(Photo #7) West area of landfill, BMX bike track – photo taken facing NE just west of track.

(Photo #8) West area of landfill, BMX bike track – photo taken facing south at starting gate.

(Photo #9) Near X207 at historical leachate seep area – photo taken facing east. (No active seep).

(Photo #10) Near X207 at historical leachate seep area – photo taken facing north. (No active seep).

(Photo #11) Near X207 at historical leachate seep area – photo taken facing south at off site drainage ditch.

(Photo #12) Near X207 at historical leachate seep area – photo taken facing west at off site drainage ditch.

(Photo #13) Near X207 at historical leachate seep area – photo taken facing NE. (No active seep).

(Photo #14) Center of landfill area – photo taken facing south between X206 and X207.

(Photo #15) Near X207 at historical leachate seep area – photo taken facing NE. (No active seep).

(Photo #16) West area of landfill – photo taken facing SW between X206 and X207.

(Photo #17) North property line of landfill – photo taken facing east between X206 and X207.

(Photo #18) North side of landfill – photo taken facing north from center area of landfill.

(Photo #19) West area of landfill – photo taken facing west from center area of landfill.

(Photo #20) East side of landfill – photo taken facing east from center area of landfill.

Photo #1

Photo #2

Photo #3

Photo #4

Photo #5

Photo #6

Photo #7

Photo #8

Photo #9

Photo #10

Photo #11

Photo #12

Photo #13

Photo #14

Photo #15

Photo #16

Photo #17

Photo #18

Photo #19

Photo #20